REMARKS

By this amendment, claims 1-2 and 16-19 have been cancelled and claims 3, 6, 8, 11 and 13 have been amended in the application. Currently, claims 3-15 are pending in the application.

Claims 3, 6, 8, 11 and 13 were objected to because the following informalities: in the step (III) of claim 3, "the same complexing agent" should be changed to "the complexing agent". By this amendment, claim 3 has been amended as suggested by the Examiner.

The Examiner also stated that in claims 6, 8, 11, and 13, the phrase "initial thin nickel films" should be changed to "initial thin nickel film". By this amendment, claims 6, 8, 11 and 13 have been amended as suggested by the Examiner. Therefore, it is respectfully submitted that these objections have been overcome and should be withdrawn.

Claims 3-15 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3, 5, 7 and 9-39 of copending Application No. 10/820,024 in view of Kawakami et al. (JP 1-242782). By this amendment, applicants hereby submit the enclosed Terminal Disclaimer to Obviate a Double Patenting

Rejection over claims 3, 5, 7 and 9-39 of copending Application No. 10/820,024. It is respectfully submitted that this rejection should be withdrawn in view of the submission of this Terminal Disclaimer.

Also, claims 3-15 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-7 of U.S. Patent No. 6,770,369 in view of Kawakami et al. By this amendment, applicants hereby submit the enclosed Terminal Disclaimer to Obviate a Double Patenting Rejection Over Prior Patent. It is respectfully submitted that this rejection should be withdrawn in view of the submission of this Terminal Disclaimer.

Claims 3-15 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. (JP 1-242782). Also, claims 3-15 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. in view of Weber et al. (U.S. Patent No. 6,274,241). Further, Claims 3-15 were rejected under 35 USC 103(a) as being obvious over Kawakami et al./Kawakami et al. in view of Weber et al./, further in view of Segawa et al. (JP 2001-316834).

These rejections are respectfully traversed in view of the amendments to independent claim 3, the enclosed two Declarations under 37 CFR 1.132 showing the differences with the prior art to Kawakami et al. and Weber et al. and the remarks below.

The present invention relates to a conductive electroless plated powder and a method for making the same. More particularly, the present invention relates to a conductive electroless plated powder including core particles and a nickel film provided on each core particle, the nickel film having improved adhesion with the core particle (see page 1, lines 8-13 of the specification).

In the nickel film formed on the surface of the core particle, crystal grain boundaries are not recognized in the cross section in the direction of the thickness of the nickel film, i.e., perpendicularly to the surface of the core particle as shown in Fig. 1 (see page 5, lines 11-15 of the specification).

The method for making the plated powder mainly includes a catalyzation step (1), an initial thin film formation step (2), and an electroless plating step (3). In the catalyzation step, the core particles which have a noble metal ion-capturing ability or to which a noble metal ion-capturing ability is imparted by surface treatment are allowed to capture noble metal ions, and then the noble metal ions are reduced so that the surfaces of the core particles support the noble metal. In the initial thin film formation step (2), the core particles supporting the noble metal are dispersed in an initial thin film-forming solution containing

nickel ions, a reducing agent, and complexing agent composed of an organic carboxylic acid or a salt thereof so that nickel ions are reduced to form initial thin nickel film on the surfaces of the core particles. In the electroless plating step (3), a nickel ion-containing solution containing the complexing agent and a reducing agent-containing solution are individually and simultaneously added to an aqueous suspension containing the core particles provided with the nickel initial thin film and the complexing agent to carry out electroless plating (see page 10, line 13 - page 11, line 10 of the specification).

By this amendment, claim 3 has been amended to recite the steps of "(II) dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution containing nickel ions, a reducing agent, and a complexing agent comprising an organic carboxylic acid or a salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles; and (III) adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension containing the core particles having the initial thin film on the surface thereof so as to perform

electroless plating and so that grainless boundaries are recognized in cross section in a direction of a thickness of the nickel film".

These features are not shown or suggested by Kawakami et al. Weber et al. and Segawa et al. or any combination of these references.

Kawakami et al. relate to an electroless plated powder and a production process therefore (see page 1, lines 14-15 of the translation).

Kawakami et al. disclose the step of allowing a core material to trap noble metal ions, and then reducing the ions to carry the metal on the surface of the core material (see page 14, lines 19-24 and page 15, lines 5-7 of the translation).

Kawakami et al. also disclose the step of dispersing the powder of the core material in an aqueous suspension (page 16, line 11 - page 17, line 10 of the translation).

Kawakami et al. also disclose the step of adding at least two solutions constituting the electroless plating solution individually and simultaneously to the aqueous suspension to perform an electroless plating (see page 18, line 23 - page 19, line 6 of the translation).

Kawakami et al. do not disclose the steps of (II) dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution containing nickel ions, a reducing

agent, and a complexing agent comprising an organic carboxylic acid or a salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles; and (III) adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension containing the core particles having the initial thin film on the surface thereof so as to perform electroless plating and so that grainless boundaries are recognized in cross section in a direction of a thickness of the nickel film as claimed in independent claim 3.

Applicants respectfully submit that the method for producing a conductive electroless plated powder described in the present invention is different from the method described in Kawakami et al. so that the conductive electroless plated powder of the present invention is not identical to the conductive electroless plated powder of Kawakami et al.

Specifically, Kawakami et al. disclose an aged plating solution may be added to an aqueous suspension containing a powder of a core material having reduced noble metal ions thereon. However, even if an aged plating solution is added to

the aqueous suspension, an initial thin film is not formed. The reason for this is as follows.

An aged plating solution contains metal ions and a reducing agent. However, although the reducing agent contained in the aged plating solution has a reducing power in a broad sense, the reducing agent does not have a high reducing power sufficient to reduce metal ions. Kawakami et al. disclose sodium hypophosphite and the like as examples of the reducing agent. For example, regarding sodium hypophosphite, when metal ions are reduced by electroless plating using sodium hypophosphite, hypophosphite ions are changed (oxidized) to phosphite ions. Although phosphite ions have a weak reducing property, they do not have a reducing property sufficient to reduce metal ions.

In Kawakami et al., the purpose of the description of the addition of an aged plating solution to an aqueous suspension containing a powder of a core material having reduced noble metal ions thereon lies in reusing unreduced metal ions and a complexing agent contained in the aged plating solution without disposing of the plating solution. However, since the reducing agent no longer has a reducing power, the reducing agent cannot be reused. In order to clarify this point, the Declaration under 37 CFR 1.132 attached in this amendment proves that an initial thin film is not formed on the surface of the core powder.

Therefore, Kawakami et al. do not disclose the step of dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution containing nickel ions, a reducing agent, and a complexing agent comprising an organic carboxylic acid or a salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles as claimed in the present invention.

Next, applicants respectfully submit that in Kawakami et al., a nickel ion-containing solution used in the step of electroless plating does not contain a complexing agent. Specifically, Kawakami et al. disclose that at least two solutions constituting a plating solution are individually and simultaneously added. In addition, Kawakami et al. disclose that a complexing agent can be used in the plating solution. However, Kawakami et al. do not disclose that in the two solutions of the plating solution, one of the solutions that contain metal ions contains a complexing agent. None of the examples described in Kawakami et al. discloses the addition of a complexing agent to either of two solutions of the plating solution. Therefore, Kawakami et al. do not disclose the step of adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a

reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension containing the core particles having the initial thin film on the surface thereof so as to perform electroless plating as claimed in the present invention.

Also, as described above, Kawakami et al. disclose a complexing agent can be used in a plating solution. However, Kawakami et al. neither describes nor suggests that the same type of complexing agent as that contained in the aqueous suspension containing the powder of a core material having an initial thin film on the surface thereof is used as the complexing agent. None of the examples described in Kawakami et al. disclose the addition of a complexing agent to either of two solutions of the plating solution. Therefore, as described above, Kawakami et al. do not disclose the step of adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension containing the core particles having the initial thin film on the surface thereof so as to perform electroless plating as claimed in the present invention.

For these reasons, it is believed that Kawakami et al. do not show or suggest the present claimed features of the present invention. Applicants also submit that Weber et al. do not make up for the deficiencies in Kawakami et al.

Weber et al. relate to a substrate, a method of nucleation, a powder, and a method for metal plating (see column 1, lines 6-7). Glass substrates in the form of plates of glass or glass powder are nucleated with palladium and then coated with a layer of nickel/tungsten (see column 3, lines 49-52).

Weber et al. also disclose that a single metal such as Ni, Cu, Ag, Au and platinum metals or metal oxide can be applied (see column 5, line 46-48).

Weber et al. do not disclose the steps of (II) dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution containing nickel ions, a reducing agent, and a complexing agent comprising an organic carboxylic acid or a salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles; and (III) adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension

containing the core particles having the initial thin film on the surface thereof so as to perform electroless plating and so that grainless boundaries are recognized in cross section in a direction of a thickness of the nickel film as claimed in independent claim 3.

Applicants respectfully submit that applicants conducted a series of tests and these experiments have been detailed in the other attached Declaration under 37 CFR 1.132 signed by Mr. Shinji Abe, one of the inventors of the present invention. This Declaration and the accompanying color (and black and white) pictures (one set of each) show that when the Weber et al. process is applied to the core particles using several different conditions, no continuous Ni metal coating was obtained. Further, no grainless boundaries were found in any of the examples using the Weber et al. process. It is therefore believed that in view of the amendments to the claims and the attached Declarations, that the claims in this application are allowable over the prior art of record.

Also, applicants respectfully submit that Weber et al. do not have enough support of the specific method for forming the nickel film on the glass powder. In other words, Weber et al. do not teach or suggest dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution

containing nickel ions, a reducing agent, and a complexing agent comprising an organic carboxylic acid or salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles as claimed in independent claim 3.

Also, applicants respectfully submit that there is no motivation to combine the method described in Kawakami et al. and Weber et al. because none of the prior art references teach or suggest the method for providing grainless boundaries as described in the present invention.

Also, one of the purposes of the present invention is to provide the grainless boundaries so that the presently claimed method is necessary. Therefore, it would not have been obvious to combine Kawakami et al. and Weber et al. because there is no reason or motivation to combine these methods.

For these reasons, it is believed that Weber et al. do not show or suggest the present claimed features of the present invention. Applicants also submit that Segawa et al. do not make up for the deficiencies in Kawakami et al. and Weber et al.

Segawa et al. relate to an apparatus for electroless plating and a method for forming a conductive film.

Segawa et al. disclose an apparatus for an electroless plating capable of suppressing a change of a plating liquid with

time and carrying out electroless plating homogeneously and accurately, and provide a method for forming a conductive film (abstract).

Segawa et al. do not disclose the steps of (II) dispersing the core particles in an aqueous medium comprising an initial thin-film-forming solution containing nickel ions, a reducing agent, and a complexing agent comprising an organic carboxylic acid or a salt thereof to prepare an aqueous suspension, and reducing the nickel ions to form a nickel initial thin film on the surface of the core particles; and (III) adding a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent-containing solution, to the aqueous suspension individually and simultaneously, the aqueous suspension containing the core particles having the initial thin film on the surface thereof so as to perform electroless plating and so that grainless boundaries are recognized in cross section in a direction of a thickness of the nickel film as claimed in independent claim 3.

It is therefore respectfully submitted that Kawakami et al., Weber et al., and Segawa et al., individually or in combination, do not teach, disclose or suggest the presently claimed invention and it would not have been obvious to one of ordinary skill in

the art to combine these references to render the present claims obvious.

In view of foregoing claim amendments and remarks, it is respectfully submitted that the application is now in condition for allowance and an action to this effect is respectfully requested.

If there are any questions or concerns regarding the amendments or these remarks, the Examiner is requested to telephone the undersigned at the telephone number listed below.

Respectfully submitted,

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